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EXAMINER

FLANIGAN, ALLEN J

ART UNIT PAPER NUMBER

3743

DATE MAILED: 08/08/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/924,153

Applicant(s)

WOODARD ET AL.

Examiner

Allen J. Flanigan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 April 2003 and 02 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-104 is/are pending in the application.
- 4a) Of the above claim(s) 77-104 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 74-76 is/are allowed.
- 6) ☒ Claim(s) 1-55, 59-63, 66, 68, 72, and 73 is/are rejected.
- 7) ☐ Claim(s) 56-58, 64, 65, 67 and 69-71 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Applicant's election with traverse of the invention of a heat dissipating device, and the species of Figs. 2A-2B in Paper Nos. 6 and 8 is acknowledged. The traversal is on the ground(s) that "a comprehensive search" would involve searching each species disclosed. This is not found persuasive because to properly traverse an election requirement, the alleged errors in the requirement must be pointed out. Applicant has not pointed out how the Examiner's determination of patentable distinctness between the disclosed species is erroneous.

The requirement is still deemed proper and is therefore made FINAL.

Claims 77-104 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention or species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper Nos. 6 and 8.

Claims 3, 4, 22, 23, 33, 34, 50, and 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims listed above recite that a "majority" or a specific percentage of the heat generated by a heat-producing device is transmitted to a heat sink. This is a limitation that cannot be reliably supported and is inconsistent with the disclosure. For example, claim 3 is drawn only to the heat transmitter;

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there is no limitation placed on the heat-generating device, nor on the extent of contact the heat-transferring device may make in use with the heat-generating device. A component exposed to ambient, for example, having only 1 percent of its surface contacted by the heat transmitter cannot possibly have most of its heat transmitted to a heat sink associated with the heat transmitter, no matter how efficiently it works. Even with regard to claims 50 and 51, although the “configured and arranged” language might seem to imply substantial contact sufficient to meet this limitation, it is conceivable that a bearing that was overheating might find alternative heat rejection pathways¹ that would render the claimed “majority” limitation unattainable.

It is clear that what applicant meant to claim is configuring the heat transmitting or transferring device such that a majority of the heat delivered to the portion in thermal contact with the heat-producing device is transmitted to the portion in contact with the heat sink.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

¹ Radiation, for example. Radiation occurs as a function of the fourth power of the temperature difference; at high temperatures, radiation from a heated object, in a vacuum, can become substantial.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Goldberg et al.

Goldberg et al. shows a flexible thermal connection having transmitting copper cables (multistrand) extending between first and second coupling plates 13, 23 contacting a heat source and sink to thereby transmit heat therebetween.

Regarding claims 3 and 4, and others that attempt to address the relative heat transfer efficiency of the claimed device (see 112 second paragraph rejection above), a comparison between the relative size and number of the connecting ropes 17, 18 of Goldberg et al. relative to the contact strips 13, 23 and the similar elements of Figs. 2A, 2B of the instant application (connectors 206, and contact elements 202, 204) along with the fact that both are similar in material and possible construction (multistrand copper wire) suggests that their thermal conduction efficiency performance would be comparable. In other words, if applicant's Fig. 2A, 2B embodiment is capable of meeting the claimed recitation of transmitting "a majority" or "at least 50 percent" of the

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heat supplied to the heat source contacting element, then the similarly configured device of Goldberg et al. would presumably be so capable.

Regarding claim 8 and similar recitations, the terms "radial", "axial", and "angular" are meaningless unless placed in a context which gives them meaning (radial, axial, or angular relative to what axis?)

Regarding claim 32, since the bearing is not a positively recited element of the claim, the recitation of this claim is given no weight, since it concerns the intended use of the claimed device (what heat producing component the device is meant to be used with).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 22, 23, 33, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg et al.

Assuming arguendo that Goldberg et al. do not positively or implicitly teach values for the number and composition of conductive cables and contact bars that would anticipate the degree of heat conductivity these claims are attempting to recite, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to increase the number, size, or other attributes of Goldberg et al.'s flexible thermal connection to increase the

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conductivity thereof to improve the overall performance of the device to meet the requirements of a specific application. After all, Goldberg et al. specifically recognize the problem of efficiency as one that their invention addresses (see lines 36-38 and 52-54 of column 1).

Claims 43-47 are rejected under 35 U.S.C. 102(e) as being anticipated by Bonneville et al.

Although claim 43 refers to a "flywheel energy storage system", there is no positive recitation of a flywheel or any other components of such a system (cf claim 48). The claim recites only a "heat-generating component", which could conceivably be almost anything, including an electronic component in control circuitry for the energy storage system. Bonneville show that the combination of flexible heat transmitting devices with heat generating electronic components and heat sinks is known in the art. Thus, every one of the three positively recited elements of claim 43 is found in Bonneville et al.

Claims 48, 49, 52-55, 59-63, 66, 68, 72, and 73 are rejected under 35 U.S.C. 102(b) as being anticipated by Richter.

Richter shows a heat conducting device for a bearing of a shaft 2 on which is mounted a spinning mass (see Fig. 1). Note that both the Fig. 1 and Fig. 2 embodiments show a conducting member having three sections, a disk portion (Fig. 1) or hollow spherical member 35 (Fig. 2) contacting the heat generating bearing mount, a cylindrical portion contacting a heat sink (housing 19), and a flexible bellows section disposed between these two sections. These

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distinct sections are clearly readable on the claimed "first", "second", and "third" members. Note also that Richter suggests the use of a copper-containing alloy (copper bronze) as one possible material for construction.

The recitation in claim 55 is meaningless and fails to define over the device shown in Richter, because no value or range of values for the recited "desired value" of spring constant is specified, thus, it could conceivably be any value, including those values lying at or above the inherent spring constants of the bellows of Richter.

Claims 50 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richter.

Please see the comments made in regard to the rejection of claims 3, 4, et al. over Goldberg et al., which are equally applicable herein.

Claims 56-58, 64, 65, 67, and 69-71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 74-76 are allowed.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The remaining references show heat sink or thermal conductive flexible devices of various designs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (703) 308-1015. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennett can be reached on (703) 308-0101. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7764 for regular communications and (703) 305-3463 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.

A handwritten signature in black ink that reads "allen J. Flanigan". The signature is written in a cursive, flowing style.

Allen J. Flanigan
Primary Examiner
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AJF
August 6, 2003